



ENGINE - FUEL AND CONTROL - INCORPORATE NEW FUEL AND OIL TUBES MADE FROM IMPROVED
FRETTAGE RESISTANT MATERIAL AND REVISED TUBE CLIPPING - CATEGORY CODE 7 -
MOD.ENG-73-0061

1. Planning Information

A. Effectivity

- (1) Aircraft: (a) Airbus A320
(b) Airbus A321
- (2) Engine: (a) V2500-A1 Engines prior to Serial No.V0373*
(b) V2527-A5 Engines prior to Serial No.V10206*
(c) V2530-A5 Engines prior to Serial No.V10206*

* The Serial Number data shown is of a preliminary nature and is provided for advance planning only. A future revision to this Bulletin will confirm final serial number effectivity.

B. Concurrent equirement

None

C. Reason

(1) Condition

Fretage can occur on titanium fuel and oil tubes at clipping point locations.

(2) Background

Fretage has been experienced on tubes which are manufactured in titanium.

Visual inspection of titanium fuel and oil tubes on development and service engines has identified varying degrees of wear. This Service Bulletin covers a change to steel material for a number of these tubes. See "L. References" for Service Bulletins covering the change of material on other fuel and oil tubes.

(3) Objective

To prevent tube fretage and maintain engine reliability.

(4) Substantiation

The wear between the current clips and titanium tube is caused by abrasive elements produced during mechanical interaction of the parts at elevated temperatures.

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The improved type clip and steel tube combination is used extensively on the V2500-D5 models and to a lesser extent on the V2500-A5 models. Development engine testing of this standard is considered acceptable with only light polishing taking place on the tubes.

The routing of the steel tubes is identical to that of the titanium tubes and assembly checks are not considered necessary.

(5) Effects of Bulletin on Workshop Procedures:

Removal/Installation	Not affected
Disassembly/Assembly	Not affected
Cleaning	Affected
Inspection/Check	Not affected
Repair	Not affected
Testing	Not affected

(6) Supplemental Information

The cleaning procedures will be revised to add the new configuration of this Service Bulletin.

D. Description

- (1) This Service Bulletin introduces steel fuel and oil tubes to replace existing titanium tubes. Twelve tubes apply to the V2500-A1 model and ten of these are also applicable to the V2500-A5 models. The two remaining tubes on the V2500-A5 models are already manufactured in steel.
- (2) The existing 'Adel' type clips are replaced with clips from the 'AS' range at all clipping points on the tubes being changed. Where these clipping points support other rigid tubes, the 'Adel' clips are also changed to the new standard.

The configuration at all clipping points remains unchanged.

- (3) At 12 other clip locations on existing steel tubes where fretting has been identified, the 'Adel' clips are changed to the 'AS' clips.
- (4) The bolt length required at certain clipping points has been re-calculated and a change of bolt made where necessary.

E. Approval

The part number changes and/or part modifications described in Section 2 and 3 of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the engine models listed.

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**F. Compliance**

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Accomplish when supply of superseded parts has been depleted.

G. Manpower

Estimated manhours to incorporate the full intent of this Bulletin:

Venue	Estimated Manhours
(1) In Service	Not applicable
(2) At Overhaul	Not affected

H. Material – Price and Availability

- (1) Modification Kit is not required
- (2) See "Material Information" section for prices and availability of future spares.

I. Tooling – Price and Availability

Special tools are not required.

J. Weight and Balance

- (1) Weight change
 - (a) V2500-A1: Plus 2.4 lb (1,091 kg)
 - (b) V2527-A5 and V2530-A5: Plus 1.8 lb (0,818 kg)
- (2) Moment arm
 - (a) V2500-A1: 1.3 in (33 mm) rearward of datum
 - (b) V2527-A5 and V2530-A5: 2.4 in (61 mm) rearward of datum
- (3) Datum
 - Engine front mount centerline (Power Plant Station (PPS) 100)

K. Electrical Load Data

This Service Bulletin has no effect on the aircraft electrical load.



L. References

(1) Internal Reference No.

EC93VR023

EC93VR023A

(2) Other references

V2500-ENG-73-0040: Engine - Fuel and Control - Fuel Tubes - Fuel Metering Unit to Fuel Diverter Valve Servo Tubes Re-routed.

V2500-ENG-73-0045: Engine - Fuel and Control - Introduction of Tubes made of Improved Fretting Resistant Material.

V2500 Engine Manual (E-V2500-1IA).

M. Other Publications Affected

- (1) V2500 Illustrated Parts Catalog (S-V2500-1IA) and (S-V2500-2IA), Chapter/Section, 36-11-47, 71-51-41, 73-11-49, 75-23-48, 75-32-49, 79-21-49 and 79-22-49.
- (2) V2500 Component Maintenance Manual (CMM-THD-V2500-1IA), 36-11-47 Inspection/Check-00 and -02. 72-11-49, Cleaning-00, -01, -04 and -05, Inspection/Check-00, -02 and -05. 79-21-49, Cleaning-00 and -03, Inspection/Check-00 and -02.

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2. Accomplishment Instructions

A. Rework Instructions

- (1) There are no rework instructions necessary to accomplish this Service Bulletin.

B. Assembly Instructions

- (1) Install the new fuel tubes, clips and bolts in accordance with approved procedures, Reference (3), Chapter/Section 72-00-32, Installation-03 and Chapter/Section 72-00-60, Installation-03.

C. Recording Instructions

- (1) A record of accomplishment is necessary.



SERVICE BULLETIN

3. Material Information

Applicability: For each V2500 Engine to incorporate this Bulletin.

A. Kits associated with this Bulletin:

None

B. Parts affected by this Bulletin:

New Part No. (ATA No.)	Qty	Est'd Unit Price (\$)	Keyword		Old Part No. (IPC No.)	Instructions Disposition
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A1 & A5
MODELS

AS62404 (36-11-47)	1	19.40	Clip	CP0576	400WSS4 (02-136)	(A)(C)(H) (S1)
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AS62404 (36-11-47)	1	19.40	Clip	CP0578	400WSS4 (02-528)	(A)(C)(S1)
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A1 MODEL

4W0103 (71-51-41)	1	4.18	Bolt, bi-hex	CP0756	4W0104 (01-630)	(A)(1D) (S1)(S10)
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A1 & A5
MODELS

6A5343 (73-11-49)	1	706.00	Tube assy, fuel - I.D. generator F.C.O.C. to fuel diverter		2A0650 (03-500)	(A)(B)(S1)
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A1 MODEL

6A5341 (73-11-49)	1	643.00	Tube assy, fuel - Fuel flowmeter to disconnect		2A0618 (07-500)	(A)(B) (S1)(S2)
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AS62412 (73-11-49)	1	22.50	Clip	CP1049	400WSS12 (07-528)	(A)(C) (S1)(S2)
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A1 & A5
MODELS

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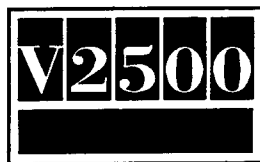


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4W0114 (73-11-49)	1	2.86	Bolt, bi-hex	CP0246	4W0115 (08-125)	(A)(1D) (E)(S1)
AS62412 (73-11-49)	1	22.50	Clip	CP0246	400WSS12 (08-128)	(A)(B) (E)(S1)
AS62408 (73-11-49)	1	20.90	Clip	CP0246	400WSS8 (10-528)	(A)(B) (E)(S1)
AS62408 (73-11-49)	1	20.90	Clip	CP0246	400WSS8 (20-136)	(A)(B) (E)(S1)
6A5351 (73-11-49)	1	301.00	Tube assy, fuel - Disconnect to disconnect - Fuel supply A.C.O.C.		5R8102 (22-500)	(A)(B) (S1)(S3)
AS62404 (73-11-49)	1	19.40	Clip	CP0578	400WSS4 (22-544)	(A)(C) (S1)(S3)
4W0103 (73-11-49)	1	4.18	Bolt, bi-hex	CP1048	4W0104 (22-549)	(A)(1D) (S1)(S3)
AS62404 (73-11-49)	1	19.40	Clip	CP1048	400WSS4 (22-552)	(A)(C) (S1)(S3)
6A5356 (73-11-49)	1	285.00	Tube assy, fuel - Disconnect to A.C.O.C. - Fuel supply to A.C.O.C.		5R8128 (23-100)	(A)(B) (S1)(S4)
AS62404 (73-11-49)	1	19.40	Clip	CP0579	400WSS4 (23-128)	(A)(C) (S1)(S4)
4W0103 (73-11-49)	1	4.18	Bolt, bi-hex	CP0580	4W0104 (23-133)	(A)(1D) (F)(S1)
AS62404 (73-11-49)	1	19.40	Clip	CP0580	400WSS4 (23-136)	(A)(C)(F) (S1)(S4)
4W0104 (73-11-49)	1	4.18	Bolt, bi-hex	CP0220	4W0105 (23-141)	(A)(1D) (G)(S1)
AS62404 (73-11-49)	1	19.40	Clip	CP0220	400WSS4 (23-144)	(A)(C)(G) (S1)(S4)

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6A5357 (73-11-49)	1	267.00	Tube assy, fuel - A.C.O.C. to disconnect - Fuel return from A.C.O.C.		5R8129 (23-500)	(A)(B) (S1)(S5)
AS62404 (73-11-49)	1	19.40	Clip	CP0220	400WSS4 (23-528)	(A)(C)(G) (S1)(S5)
AS62404 (73-11-49)	1	19.40	Clip	CP0580	400WSS4 (23-536)	(A)(C)(G) (S1)(S5)
AS62404 (73-11-49)	1	19.40	Clip	CP0579	400WSS4 (23-544)	(A)(C)(G) (S1)(S5)
6A5358 (73-11-49)	1	228.00	Tube assy, fuel - Disconnect to disconnect - Fuel return from A.C.O.C.		5R8130 (24-100)	(A)(B) (S1)(S6)
AS62404 (73-11-49)	1	19.40	Clip	CP0578	400WSS4 (24-128)	(A)(C) (S1)(S6)
AS62404 (73-11-49)	1	19.40	Clip	CP1036	400WSS4 (24-136)	(A)(C) (S1)(S6)
6A5359 (73-11-49)	1	542.00	Tube assy, fuel - Disconnect to disconnect - Fuel return from A.C.O.C.		5R8144 (24-500)	(A)(B) (S1)(S7)
4W0124 (73-11-49)	1	7.10	Bolt, bi-hex	CP0576	4W0125 (24-525)	(A)(1D) (H)(S1)
AS62404 (73-11-49)	1	19.40	Clip	CP0576	400WSS4 (23-528)	(A)(C)(H) (S1)(S7)
4W0103 (73-11-49)	1	4.18	Bolt, bi-hex	CP0564	4W0104 (24-533)	(A)(1D) (J)(S1)
AS62404 (73-11-49)	1	19.40	Clip	CP0564	400WSS4 (23-536)	(A)(C)(J) (S1)(S7)
4W0102 (73-11-49)	1	4.18	Bolt, bi-hex	CP0602	4W0103 (24-541)	(A)(1D) (S1)(S7)
AS62404 (73-11-49)	1	19.40	Clip	CP0602	400WSS4 (24-544)	(A)(C) (S1)(S7)
AS62404 (75-23-48)	1	19.40	Clip	CP0576	400WSS4 (02-160)	(A)(C) (H)(S1)

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AS62404 (75-23-48)	1	19.40	Clip	CP0564	400WSS4 (02-528)	(A)(C) (J)(S1)
AS62404 (75-32-49)	1	19.40	Clip	CP0578	400WSS4 (10-160)	(A)(B)(S1)
AS62404 (75-32-49)	1	19.40	Clip	CP0576	400WSS4 (10-528)	(A)(C) (H)(S1)
AS62414 (79-21-49)	1	23.10	Clip	CP0220	400WSS14 (02-128)	(A)(C) (G)(S1)
6A5347 (79-21-49)	1	2134.00	Tube assy, oil - Disconnect to disconnect - F.C.O.C. to bifurcation panel oil supply		5A8777 (04-100)	(A)(B) (S1)(S8)
AS62414 (79-21-49)	1	23.10	Clip	CP0258	400WSS14 (04-128)	(A)(C) (S1)(S8)
AS62412 (79-21-49)	1	22.50	Clip	CP0321	400WSS12 (04-136)	(A)(C) (S1)(S8)
6A5350 (79-21-49)	1	253.00	Tube assy, oil - Disconnect to bifurcation panel - Oil supply from F.C.O.C.		5A9356 (04-500)	(A)(B) (S1)(S9)
AS62412 (79-21-49)	1	22.50	Clip	CP0246	400WSS12 (04-528)	(A)(C)(E) (S1)(S9)
A1 MODEL						
6A5346 (79-21-49)	1	850.00	Tube assy, oil - Disconnect to oil tank		5A8794 (05-100)	(A)(B) (S1)(S10)
AS62404 (79-21-49)	1	19.40	Clip	CP0755	400WSS4 (05-152)	(A)(C) (S1)(S10)
4W0102 (79-21-49)	1	4.18	Bolt, bi-hex	CP1093	4W0103 (05-157)	(A)(1D) (S1)(S10)
AS62404 (79-21-49)	1	19.40	Clip	CP1093	400WSS4 (05-160)	(A)(C) (S1)(S10)
A1 & A5 MODELS						

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6A5348 (79-21-49)	1	654.00	Tube assy, oil - Disconnect to disconnect - Oil to angle gearbox	5A8778 (06-100)	(A)(B) (S1)(S11)
AS62408 (79-21-49)	1	20.90	Clip CP0288	400WSS8 (06-128)	(A)(C) (S1)(S11)
6A5349 (79-21-49)	1	554.00	Tube assy, oil - Disconnect to angle gearbox	5A8779 (06-500)	(A)(B) (S1)(S12)
AS2408 (79-21-49)	1	20.90	Clip CP0287	400WSS8 (06-528)	(A)(C) (S1)(S12)
AS62407 (79-21-49)	1	20.20	Clip CP5768	400WSS7 (14-160)	(A)(B)(S1)
AS62412 (79-22-49)	1	22.50	Clip CP0565	400WSS12 (02-129)	(A)(B)(S1)
4W0104 (79-22-49)	1	4.18	Bolt, bi-hex CP0558	4W0103 (04-525)	(A)(1D) (K)(S1)
AS62416 (79-22-49)	1	23.90	Clip CP0558	400WSS16 (04-528)	(A)(C) (K)(S1)
AS62416 (79-22-49)	1	23.90	Clip CP0556	400WSS16 (04-536)	(A)(B)(S1)

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C. Instructions/Disposition Code Statements:

- (A) New part is currently available
- (B) Old part will no longer be available
- (C) Old part will continue to be available
- (1D) Old part may be used up on other applications
- (E) New bolt coded (E) to be fitted only when all clips coded (E) have been incorporated
- (F) New bolt coded (F) to be fitted only when all clips coded (F) have been incorporated
- (G) New bolt coded (G) to be fitted only when all clips coded (G) have been incorporated
- (H) New bolt coded (H) to be fitted only when all clips coded (H) have been incorporated
- (J) New bolt coded (J) to be fitted only when all clips coded (J) have been incorporated
- (K) New bolt coded (K) to be fitted only when all clips coded (K) have been incorporated
- (S1) New part may be fitted in place of old part but not vice-versa
- (S2) New parts coded (S2) to be fitted as a set
- (S3) New parts coded (S3) to be fitted as a set

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- (S4) New parts coded (S4) to be fitted as a set
- (S5) New parts coded (S5) to be fitted as a set
- (S6) New parts coded (S6) to be fitted as a set
- (S7) New parts coded (S7) to be fitted as a set
- (S8) New parts coded (S8) to be fitted as a set
- (S9) New parts coded (S9) to be fitted as a set
- (S10) New parts coded (S10) to be fitted as a set
- (S11) New parts coded (S11) to be fitted as a set
- (S12) New parts coded (S12) to be fitted as a set

NOTE: The estimated 1995 unit prices shown are provided for planning purposes only and do not constitute a firm quotation. Consult the IAE Price Catalog or contact IAE's Spare Parts Sales Department for information concerning firm prices.

